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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

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HERVE LESCUYER et al

Group Art Unit: 1723

Serial No.: 09/856,460

Examiner: K. S. Menon

Filed: August 7, 2001

For: IMPROVED METHOD FOR FILTERING A METAL LIQUID
ON A BED OF REFRACTORY PARTICULATE MATERIAL

RESPONSE

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

The following remarks are submitted in response to
the Office action mailed October 1, 2003.

Claims 1, 2, 4 and 6 have been rejected under 35 USC
103 over Hess et al in view of Rieger et al, while Claims 3
and 11 have been rejected under 35 USC 103 over this
combination of references in further view of Brezny, and
Claims 5, 7, 8 and 9 have been rejected under 35 USC 103(a)
over this combination of references in further view of
Neidhardt et al.

The claimed invention is directed to a filtration method for liquid metal comprising passing the liquid metal on a bed of refractory particulate material having an open porosity between 5 and 30%.

Hess et al has been cited to show a filtration method for liquid metal in which the liquid metal is passed through a bed of refractory particulate material, with no porosity being disclosed for the refractory particles.

Rieger et al has been cited to show a filter medium in the form of a stable porous body of granules of spherical form bonded together by a different phase or by sintering. The Office action has taken the position that the particles of Rieger et al contain 30% porosity within the particles and that it would have been obvious for one of ordinary skill in the art to use such particles in the teaching of Hess for improved wettability of filter capacity, as disclosed by Rieger et al at column 2, lines 15 through 21.

In the previous Response, Applicants submitted a Declaration of Pierre Le Brun, containing an analysis of the Rieger et al patent, in which he calculated the porosity within the Rieger et al granules to be approximately 55%, much higher than the presently claimed range of 5 to 30% for open porosity. Moreover, Dr. Le Brun states the porosity intended

for filtration by Rieger et al is that of the space between the granules, and that the space within the granules is normally not accessible to liquid metal for filtration and does not significantly enhance the open porosity of the plate.

In response to the citation of this Declaration, the Office action now makes reference to column 7, lines 30 through 49 of Rieger et al which is interpreted by the Office action as stating that the total void volume of the bed is 82%, and of this, 55% is available for filtration. The Office action then states that the actual volume available within the particles of the bed for filtering is much less than 55% and if the void volume of the bed between the granules is maintained at 45% as disclosed in Rieger et al, then the contribution of the void volume that comes from within the granules must be 10%.

Applicants strongly disagree with this interpretation of the Rieger et al patent. Submitted herewith is a further Declaration of Dr. Le Brun, analyzing the statement of Rieger et al at column 7, lines 30 through 49.

Dr. Le Brun states that during the 1980's, when the Rieger et al was written, one of the main problems with filters for liquid metal was that liquid metal would not flow evenly throughout the entire available space. In other words,

some of the available porosity was not penetrated by the liquid metal. Dr. Le Brun believes that the cited paragraph in Rieger et al refers to this phenomenon, and that the 82% figure is a relative figure, specifically the figure being relative to the available porosity which can be penetrated by the liquid metal during filtration.

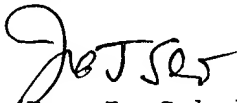
Consequently, Rieger et al does not state that the porosity of the filter is 82%, and it is not possible to determine the total available space using that 82% figure which is only a relative number. The overall porosity of the filter thus must be held to be 5 to 45% by volume as disclosed at column 2, lines 40 through 48.

It is further noted that the Office action points out that while Rieger et al does not teach the inner porosity of the particles as improving filtration, but only for reducing weight, it nevertheless provides motivation to use hollow particles. While Applicants agree that Rieger et al teaches the use of hollow particles, it is once again pointed out that in such particles, the inner porosity is substantially closed, and is not available for filtration. To the contrary, the claimed invention is directed to the use of particles with open porosity, porosity which is available for filtration.

As Rieger et al does not disclose or suggest the use of particles for filtration with open porosity in the amount of 5 to 30%, withdrawal of these rejections is accordingly requested.

In view of the foregoing remarks, Applicants submit that the present application is now in condition for allowance and an early allowance of the application is earnestly solicited.

Respectfully submitted,



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